

and vigorously defending their stores. 6. Long-tongued; being able to get honey from many flowers which defy most bees.

And so far intelligent bee-masters have been partially successful; indeed, there is every reason to expect that the honey-bee of the future will be as different from, and as much more valuable than, "the little busy bee" of the past as an English shorthorn excels an Irish brindled cow.

It is to be hoped that before the modern bee-breeders have obliterated the old distinct varieties those who have the opportunities will make careful coloured drawings, measurements of queens, drones, and workers, and further observations of all their peculiarities. It will be too late to attend to this branch of natural history when *Apis americana*, as we are told the new and improved bee of the "good time coming" is to be called, has taken possession of the hives of the world.—*Proc. Belfast Nat. Field Club*, ser. 2, vol. ii. pt. 6, p. 451.

*On the Organization of Chætopterus.* By M. JOYEUX-LAFFUIE.

*Chætopterus* is one of the commonest Annelids on the coast of Calvados, where it lives abundantly below the level of the lowest tides; but considerable quantities are thrown up by the waves during strong gales, and it may be obtained by the dredge. The specimens observed by the author are referred by him to *Chætopterus Valenciini*, Quatref., notwithstanding some differences, and especially the number of segments in the inferior region, which was 30-35, instead of 15 as described.

On the median posterior\* line of the superior region there is a furrow running from the posterior margin of the buccal funnel to the base of the two dorsal rami of the first pair of feet of the middle region. Here it bifurcates, and is continued in the form of two deep grooves situated in the thickness of the two great wing-like rami. These grooves traverse the rami from the base to the extremity, and are lined with an epithelium with long vibratile cilia.

The *Chætopterus* in its tube presents its two great rami bent upwards and backwards, with the two extremities in contact in the median line. The extremities of the two grooves are also in contact, so that there is a passage from one to the other, and their function is to guide to the buccal funnel the alimentary particles conveyed by the current which traverses the tube, and is caused by the paletiform rami of the three last segments of the region. This is easily determined by the addition of some coloured powder, when the particles are seen to collect in the grooves into small masses, which pass towards the buccal furrow. The author compares this function of the grooves to that of the endostyle of the *Ascidia*.

The segmental organs are remarkably developed in *Chætopterus*.

\* The animal is supposed to be placed mouth upwards.

The median and inferior regions alone present segmental organs in pairs in each segment; the superior region never possesses any. Contrary to opinion, these organs are not contained in a single segment; they always commence in one segment and terminate in the following one; so that the first segment of the median region only contains portions of two segmental organs. Each segmental organ is formed by an internal orifice surrounded by a half-vestibule, and an excretory tube, which is continued into a spacious sac, and this opens externally through a short duct.

Each segment is separated from the following one by a diaphragm. Near the line formed by the union of this diaphragm with the integument is situated, on each side, the vestibule of the segmental organ. Its form resembles that of the sigmoid valves of the heart, and its inner surface is uniformly lined with vibratile cilia. The excretory tube follows the vestibule, and is entirely contained in the following segment; it is easily distinguished, even in the living animal, by its brownish colour. It is attached to the postero-internal surface of the large ventral muscle of the same side, and travels in a more or less curved direction in the different segments. At the level of the pedal ramus it widens considerably to form the dilated sac which follows it. This sac almost completely fills the cavity situated in the base of the dorsal ramus and opens externally by a short duct, having its external orifice upon the lower surface of the ramus. The inner walls of the whole segmental organ possess an epithelium with highly developed vibratile cilia, causing a current from within outwards.

The tissue of the walls of the segmental organ is composed of elements resembling those of the organ of Bojanus in the Mollusca. When separated these cells present a spherical form; they contain a large nucleus presenting one or more concretions, which may increase in volume, unite and form a calculus, almost entirely filling the cell. These calculi are often found free in the cavity of the organ, and it is to these concretions that its general brownish colour is due.

The sexes are separate; the testes and ovaries are nearly of the same form and position. They are mesenteroid cushions placed in pairs in each of the segments and attached to the upper surface of the partitions. Each testis or ovary has the form of a crescent, with the concavity turned towards the digestive tube. In both cases the cushion presents a great number of convolutions, united with the diaphragm by a very small mesentery, and never presenting an internal cavity. The products of reproduction are developed at the periphery and fall into the general cavity of the body, which, at the time of reproduction, is entirely filled with ova or spermatozooids. These products give a distinctive colouring to the two sexes—the males are dead-white, and the females have a slight rosy tint.—*Comptes Rendus*, July 11, 1887, p. 125.